

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A variable lens ~~(100; 200; 300; 500; 600)~~ comprising:

[[-]] a chamber ~~(125)~~ defined by at least one side wall and having an optical axis ~~(90)~~ extending longitudinally through the chamber;

[[-]] the chamber ~~(125)~~ containing a first fluid ~~(130)~~ and a second fluid ~~(140)~~ in contact over a meniscus ~~(150)~~ extending transverse the optical axis ~~(90)~~, the perimeter of the meniscus being constrained by said at least one side wall ~~(125)~~, the first and second fluids ~~(130, 140)~~ being substantially immiscible and having different indices of refraction; and

[[-]] at least one pump ~~(110; 112, 114, 116, 152; 422)~~ arranged to controllably alter ~~the a~~ position of the meniscus ~~(150)~~

along the optical axis ~~(90)~~ without changing a shape of the meniscus by altering the a relative volume of each of said first and second fluids contained within the chamber.

2. (Currently Amended) A The lens ~~(100; 200; 300; 500; 600)~~ as claimed in claim 1, wherein the at least one pump ~~(110; 112, 114, 116, 152; 422)~~ operates ~~utilising~~ utilizing at least one of: electro-capillary, differential-pressure electro-capillarity, electrowetting, continuous electrowetting, electrophoresis, electroosmosis, dielectrophoresis, electrohydrodynamic pumping, thermocapillary, thermal expansion, dielectric pumping, mechanic pumping or variable dielectric pumping.

3. (Currently Amended) A The lens ~~(100; 200; 300; 500; 600)~~ as claimed in claim 1, wherein ~~the wettability of the~~ an internal surface ~~(120) of the chamber (125) varies longitudinally.~~

4. (Currently Amended) A variable lens ~~(100; 200; 300; 500; 600)~~ as claimed in claim 1, comprising:
a chamber defined by at least one side wall and having an

optical axis extending longitudinally through the chamber;

the chamber containing a first fluid and a second fluid in
contact over a meniscus extending transverse the optical axis, the
perimeter of the meniscus being constrained by said at least one
side wall, the first and second fluids being substantially
immiscible and having different indices of refraction; and

at least one pump arranged to controllably alter a position of
the meniscus along the optical axis by altering a relative volume
of each of said first and second fluids contained within the
chamber, wherein the wettability of the internal surface (120) of
the chamber (125) is arranged to be controllably altered by the an
electrowetting effect.

5. (Currently Amended) A The lens (100; 200; 300; 500; 600) as
claimed in claim 1, wherein the chamber (125) has a circular cross-
section.

6. (Currently Amended) A variable lens (100; 200; 300; 500;
600) as claimed in claim 1, comprising:

a chamber defined by at least one side wall and having an

optical axis extending longitudinally through the chamber;

the chamber containing a first fluid and a second fluid in contact over a meniscus extending transverse the optical axis, the perimeter of the meniscus being constrained by said at least one side wall, the first and second fluids being substantially immiscible and having different indices of refraction; and

at least one pump arranged to controllably alter a position of the meniscus along the optical axis by altering a relative volume of each of said first and second fluids contained within the chamber, wherein at least one of the side walls defining the an interior surface (120) of the chamber (125) which is not parallel to the optical axis (90).

7. (Currently Amended) A The lens (100; 200; 300; 500; 600) as claimed in claim 1, wherein the lens is a zoom lens.

8. (Currently Amended) An optical device (1; 400) comprising a variable lens (100; 200; 300; 500; 600), the variable lens comprising:

[[-]] a chamber (125) defined by at least one side wall

and having an optical axis ~~(90)~~ extending longitudinally through the chamber;

[[~~-~~]] the chamber ~~(125)~~ containing a first fluid ~~(130)~~ and a second fluid ~~(140)~~ in contact over a meniscus ~~(150)~~ extending transverse the optical axis ~~(90)~~, the ~~a~~ perimeter of the meniscus being constrained by said at least one side wall, the first and second fluids being substantially immiscible and having different indices of refraction; and

[[~~-~~]] at least one pump ~~(110; 112, 114, 116, 152; 422)~~ arranged to controllably alter the ~~a~~ position of the meniscus ~~(150)~~ without changing a shape of the meniscus along the optical axis ~~(90)~~ by altering the ~~a~~ relative volume of each of said first and second fluids contained within the chamber.

9. (Currently Amended) ~~An~~ The optical device as claimed in claim 8, wherein the optical device is an optical scanning device ~~(1)~~ for scanning an information layer ~~(4)~~ of an optical record carrier ~~(2)~~, the optical device comprising a radiation source ~~(11)~~ for generating a radiation beam ~~(12, 15, 20)~~ and an objective system ~~(18)~~ for converging the radiation beam on the information

layer~~(4)~~.

10. (Currently Amended) ~~An~~ The optical device as claimed in claim 8, wherein the optical device is a variable focus image capture device~~(400)~~.

11. (Currently Amended) A method of manufacturing a variable lens~~(100; 200; 300; 500; 600)~~, the method comprising the acts of:

[[~~-~~]] providing a chamber ~~(125)~~ defined by at least one side wall and having an optical axis ~~(90)~~ extending longitudinally through the chamber;

[[~~-~~]] providing a first fluid ~~(130)~~ and a second fluid ~~(140)~~ in the chamber ~~(125)~~ such that the first and second fluids ~~(130, 140)~~ are in contact over a meniscus ~~(150)~~ extending transverse the optical axis ~~(90)~~, ~~the~~ a perimeter of the meniscus ~~(150)~~ being constrained by said at least one side walls~~(125)~~, the first and second fluids ~~(130, 140)~~ being substantially immiscible and having different indices of refraction; and

[[~~-~~]] providing at least one pump ~~(110; 112, 114, 116, 152; 422)~~ arranged to controllably alter ~~the~~ a position of the

meniscus without changing a shape of the meniscus along the optical axis by altering ~~the~~ a relative volume of each of said first and second fluids contained within the chamber.

12. (Currently Amended) A method of manufacturing an optical device ~~(1; 400)~~, the method comprising the ~~steps~~ acts of:

[[-]] providing a variable lens, the variable lens comprising:

[[-]] a chamber ~~(125)~~ defined by at least one side wall and having an optical axis ~~(90)~~ extending longitudinally through the chamber ;

[[-]] the chamber ~~(125)~~ containing a first fluid ~~(130)~~ and a second fluid ~~(140)~~ in contact over a meniscus ~~(150)~~ extending transverse the optical axis ~~(90)~~, ~~the~~ a perimeter of the meniscus ~~(150)~~ being constrained by said at least one side walls ~~(90)~~, the first and second fluids ~~(130, 140)~~ being substantially immiscible and having different indices of refraction; and

[[-]] at least one pump ~~(110; 112, 114, 116, 152; 422)~~ arranged to controllably alter ~~the~~ a position of the meniscus without changing a shape of the meniscus along the optical axis by

altering ~~the~~ a relative volume of each of said first and second
fluids contained within the chamber.